Pigment development in Cyanophyceae.—BORESCH[24] finds that as cultures of *Phormidium Ritzii* var. *nigroviolacea* age the color gradually changes from the normal olive green, olive, or sepia brown, through violet, red violet, brown red, red brown, or even yellow brown. The addition of a small amount of iron salts leads to the return of the original color in a few days in diffuse light. These changes can be repeated in a given culture at pleasure. The author believes this is the first case of iron chlorosis reported for algae, although a number of cases have been reported in higher plants under practical growth conditions. In the young cultures there is much of a red violet water soluble protein pigment with a Venetian brown fluorescence along with much chlorophyll and carotin. As the color changes with iron deficiency, the carotin remains undiminished, but the other two pigments largely disappear.

The author states that it was known already that aside from species characters, the main conditions that have interested investigators in pigment development in the blue green algae are N-chlorosis, which is very likely to occur in ordinary cultures with aging, and the effects of intensity and quality of light. In monochromatic light there is a change in the quantity of phycocyanin, and in full sunlight there is a great diminution in the amount of both chlorophyll and phycocyanin.—WM. CROCKER.

Use of nutrient salts of low solubility.—The value of certain relatively insoluble salts as sources of necessary ions for the growth of seed plants has been tested by DUGGAR[25] in a variety of combinations, but by no means covering the entire range of possibility. It is argued that in certain types of work many advantages may accrue from the use of combinations of insoluble salts, because of the tendency to maintain a constant concentration of the various ions furnished, and also because no renewal of the solution (except as to addition of NO_3) is required from day to day. In each of three cultures in which wheat or wheat and corn were used, one or more of the combinations containing two or more insoluble salts exceeded the growth in the best control culture employed. Soluble ferric phosphate, and in certain cases ferric citrate, proved very valuable. The reason for the marked beneficial action of these is not yet determined. In most cases in these experiments the P_H lay between 5.6 and 8.0, and with growth the P_H shifted somewhat toward alkalinity.—WM. CROCKER.

Life history of a Pezizella.—SHEAR and DODGE[26] have uncovered an interesting life history of an Ascomycete, and have illustrated the present

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[24] BORESCH, K., Ein neuer die Cyanophyceenfarbe bestimmender Faktor. Ber. Bot. Gesells. **38**:286–287. 1920.

[25] DUGGAR, B. M., The use of "insoluble" salts in balanced solutions for seed plants. Ann. Mo. Bot. Gard. **7**:307–327. 1920.

[26] SHEAR, C. L., and DODGE, B. O., The life history and identity of "*Patellina Fragariae*," "*Leptothyrium macrothecium*," and "*Peziza oenotherae*." Mycologia **13**: 135–170. *pls. 8–10.* 1921.